Calf Hutches

A Source of Pollutant Loading

or

is it?

DNR Ag. Program Presenters:

Jeff Kreider; Terry Donovan

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Hutches In a Variety of Settings

What Does the Industry Say

About Calf Hutches

- Keep feeding area outside so manure and urine do not build up in the bedded area.

"Keep calves healthy with proper hutch design and location"

- Place hutches on a stone surface with good drainage.

"Be sure calf hutches always have enough bedding"

Article's in the Hoard's Dairyman

What Does the Industry Say

About Calf Barns

- Drainage below bedding. To maintain a deeply bedded surface, it is critical that the pen has good drainage so that urine, spilled milk and water do not soak the bedding. A preferred feature uses drainage tile below 1.5 feet of gravel which, in turn, is covered with straw, with the tile carrying liquid to a collection area outside of the calf barn.

"Calf barns can equal hutches - With the proper specifications, calves can thrive in a barn environment. Pen space is the number one factor whether calves are grouped or not."

by Ken Nordlund, D.V.M., Becky Brotzman, D.V.M. and Arturo Gomez, D.V.M.

The authors are with the School of Veterinary Medicine, University of Wisconsin-Madison.

Article in the Hoard's Dairyman

What Does the Industry Say

About Bedding

- Straw promotes the greatest fly population, sawdust, shavings, sand and gravel the least. Sawdust is less optimal for maggot growth due to the poorer absorption of liquid, reduced availability of organic matter, higher degree of lignification, and other factors. Sand and gravel bedding tend to become compacted and unsanitary after a few weeks of calf occupancy. The addition of fresh straw over soiled bedding will keep the calf comfortable, but will increase the moisture holding capacity and fermentation potential of the pack.

“The "ABCDEFGs" for healthy calves “

by Neil Broadwater, University of Minnesota Extension Educator-Dairy

Inference

- Calf hutches and barns should be designed with drainage.
- There's a difference in liquid holding capacity based on the type of bedding used.
- Bedding does "soak up" liquids, as has been suggested, but then has more potential to release nutrients once saturation is reached.
- To reduce saturation potential adequate drainage and bedding replacement is needed so that nutrients will not come out during storm events.

Does the number of hutches really matter?

- The simple answer is, maybe?
- The not so simple answer is based on answers from other questions.
  - Is there a long term vegetated area nearby?
  - What are the drainage patterns?
  - How often are the hutch areas cleaned?
  - What is the potential for bacteria and other pollutants to migrate to a stream?
  - What are the soil types of the area?
  - Other site specific questions.

What's Been Done

- EPA conducted site visits and collected water samples.
  - Some of these site visits have required the owner to get a WPDES permit.
- DNR did some follow up sample collection and collected water samples at CAFOs.

Sample Analysis

Site	Nitrate + Nitrite (mg/l)	Phosphorus (mg/l)	Ammonia as N (mg/l)	Suspended Solids (mg/l)	Dissolved Solids (mg/l)	Fecal Coliform (CFU/100ml)
Site #1 (3500+ calf hutches)		27	53.3	1060		4.8 million
Site #2 (3500+ calf hutches)	<4.0 (LOD)	20.6	149	94.0	1610	2.3 million
Site #3 (~20 calf hutches)	7.06	1.64	2.4	84	700	11,200

Phosphorus Limit < 0.07 mg/l for most streams.

Fecal Coliform < 200 CFU/100 ml for recreational use.

Nitrate + Nitrite <0.1 mg/l for aquatic life.

LOD: limit of detection

CFU: colony forming unit

Results obtained from EPA & DNR samples.

Conclusions

- Any site that has calf hutches should have a simple site assessment submitted by the owner that answers:
  - What is the soil type(s)?
  - Where does a storm event's runoff go?
  - How many calf hutches are there normally?
  - How long does the vegetated area persist?
  - What is the maintenance plan for cleaning?
  - What is the distance to a stream and depth to groundwater?

Conclusions

- Concerns that are derived from the simple evaluation questions, may then require a more detailed evaluation by a professional engineer or certified ag engineer submitted for DNR review.
- Each site would be evaluated and may be required to meet NRCS 629– Waste Treatment and NRCS 635 – Vegetated Treatment Area for animal lot runoff.

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